

L. Yen
U.S. Serial No. 09/889,901
Amendment

Page nine

REMARKS

The claims have been amended to state that the hollow fiber module or hollow fiber membrane cartridge is either "consisting of all thermoplastic perfluorinated resin" or (in the case where end caps are included) "consisting of all thermoplastic perfluorinated resin or polytetrafluoroethylenes". Support for the latter limitation is found at Page 4, lines 18 and 19 of applicants' specification. The purpose of this invention is to provide filtration devices which are inert and resistant to degradation by processed fluids during use. For example, the use of epoxy or urethane potting compositions is excluded from applicants' claims since these compositions are sources of extractables which can migrate to a filtrate. This condition is unacceptable when a high degree of filtrate purity is required.

Claims 19, 20 and 22 have been rejected under 35 USC 102(b) or 35 USC 103(a) over EPO 299 459A2. These claims are limited to a hollow fiber membrane cartridge "consisting of all thermoplastic, perfluorinated resin" EPO. '459 discloses a process for forming a filter element from a plurality of hollow fiber membranes. The hollow fibers either contain a fine particle inorganic fiber in the fiber walls, e.g., silicic acid or a filler in the fiber lumens, e.g., gypsum or both. In all cases, the filler is removed by extraction, e.g., with NaOH. Six representative methods are disclosed. In method 1, the hollow fiber membranes contain a fine particle inorganic filler (Page 6, lines 15 and 16) which is subsequently extracted (Page 6, lines 55-56). In method 2, a portion of the fiber lumens are partially filled with calcium sulfate and calcium carbonate (Page 7, lines 6-8) which is subsequently extracted (Page 7, lines 20 and 21). In method 3, the hollow fiber membranes contain a fine particle inorganic filler which is subsequently extracted (Page 7, lines 25-27). In method 4, the one end portion of the hollow fiber is filled with gypsum and is sealed with epoxy (Page 8, lines 29-35). Both of these steps introduce undesirable extractables with the hollow fiber membrane. In method 5, the hollow fiber membrane contain a fine particle

L. Yen
U.S. Serial No. 09/889,901
Amendment

Page ten

inorganic filler while a portion of the lumens is filled with gypsum which are subsequently extracted (Page 8, lines 53-57). In method 6, the hollow fiber membranes are filled with calcium carbonate and calcium sulfate which is subsequently extruded (Page 9, lines 25-31).

Thus, in all cases, EPO 459 introduces undesirable extractables which can contaminate a filtrate. The claims are limited to filter components which exclude such extractables. Accordingly, this ground of rejection should be withdrawn.

Claims 1-18, 21 and 23 are rejected under 35 USC 103 (a) over Huang et al in view of EP '459. It is the Examiner's position that it would be obvious to use the EP '459 teachings in Huang et al to obtain hollow fiber modules with excellent heat and chemical resistance. EPO '459 is discussed above.

Huang et al discloses a method for making a filter cartridge including hollow fiber membranes. Huang et al provide no disclosure of a hollow fiber made of a thermoplastic perfluorinated resin (Col. 6, lines 32 to Col. 7, line 4). The only example given by Huang et al of a suitable fluoro resin as a potting resin is polytetrafluoroethylene (PTFE). In fact, PTFE is not thermoplastic since it does not flow when heated. The Examiner states that Huang et al discloses reheating the potting resin after it is laid on a fabric to eliminate voids (Col. 14, lines 40-55). In fact, Huang et al discloses that the potting resin can be extruded, solidified and then reheated prior to being "directed onto the fabric to produce a tube sheet" (Col. 14, lines 54-55). Accordingly, it is submitted that Huang et al does not supply the deficiencies of EPO '459 and this ground of rejection should be withdrawn.

Claims 24-27 have been rejected under 35 USC 103 over Huang et al in view of EP '459 and further in view of Niermeyer. It is the Examiner's position that it would be obvious to use the Niermeyer teachings in Huang et al in view of EP '459 to effect easier assembly of a filtration module without forming a fabric of hollow fiber. Huang et al and EP '459 are discussed above.

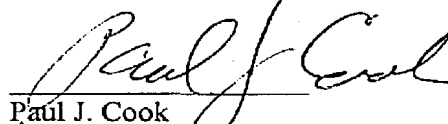
L. Yen
U.S. Serial No. 09/889,901
Amendment

Page eleven

Niermeyer discloses a filter element formed of hollow fiber membranes of high molecular weight polymers such as polypropylene, polyethylene or polytetrafluoroethylene (PTFE). Niermeyer does not disclose or suggest the use of hollow fiber membranes formed of a thermoplastic fluoropolymer. PTFE is not thermoplastic. In addition, Niermeyer does not disclose or suggest a step of reheating the potting composition.

In view of the above, it is submitted that applicants' claims define patentable subject matter and an early Notice of Allowance is respectfully requested.

Respectfully submitted,



Paul J. Cook
Registration No. 20,820
Attorney for Applicant

Date:

Mykrolis Corporation
129 Concord Road
Billerica, Massachusetts 01821-4600
Telephone: (978) 436-6582
Facsimile: (978) 436-6739